Purpose: The development of ureteral strictures is a complicated problem for patients who have had urinary reconstruction at the time of radical cystectomy. Management options range from conservative approaches with minimally invasive options such as balloon dilation and stent placement to the more invasive options with open or laparoscopic surgical repair. The purpose of this study was to review the outcomes and treatment of patients who developed ureteral stricture following Indiana pouch reconstruction at the time of robotic-assisted laparoscopic radical cystectomy.

Materials and Methods: Patients who had undergone robotic-assisted laparoscopic radical cystectomy with Indiana pouch reconstruction were reviewed regarding demographics, preoperative, perioperative, and postoperative outcomes.

Results: Thirty-four patients underwent Indiana pouch reconstruction at the time of robotic-assisted laparoscopic radical cystectomy. Six patients (17.6%) developed ureteral strictures following their initial surgery. Four patients were female and 2 patients were male with a median age of 64 and an overall median ASA of 3. All strictures were clearly documented with various imaging modalities. The median time to occurrence was 60 days after radical cystectomy with a median time to final treatment of 125 days after radical cystectomy. All of the strictures occurred on the left side, were unilateral, and were symptomatic prior to diagnosis (i.e., nausea, vomiting, renal insufficiency, pain, infection). Management was based on clinical parameters with all cases having eventual successful treatment of the stricture. Three patients had attempted treatment with balloon dilation of the stricture and stent placement. Only one of the three patients had successful treatment with balloon dilation alone and his stricture was noted to be <1cm in length versus >1cm for those who failed. The remainder of patients required open repair with either revision of the anastomosis in two patients or by creation of an ileal ureter in the remaining 3 patients. All patients had been prepared for the possibility of ileal ureter and the decision regarding revision versus use of an ileal ureter was based on length of the stricture and the ability to adequately perform an anastomotic revision. All patients had documented successful treatment based on postoperative imaging. Two patients (33%) had complications within the first 90 days after surgery, all of which were graded as Clavien ≤2.

Conclusions: Ureteral strictures following Indiana pouch reconstruction can usually be successfully managed, but frequently require invasive options. Further study is needed to determine the contribution of robotic-assisted laparoscopic surgery in the development of ureteral strictures.
Purpose: To review the perioperative and follow-up outcomes of patients undergoing radical cystectomy with orthotopic neobladder reconstruction for high risk bladder cancer after prior radical prostatectomy for prostate cancer.

Materials and Methods: A retrospective review of more than 2800 patients treated with radical cystectomy at USC/Norris Comprehensive Cancer Center between 1971 and 2011 was conducted. Sixty-four patients previously treated for prostate cancer with radical prostatectomy were identified. Twenty-four of these patients (38%) underwent orthotopic neobladder reconstruction. Perioperative data and follow-up including postoperative continence were analyzed.

Results: The median age at cystectomy for these 24 patients was 68 years (range 55 to 89). The mean time to cystectomy after prior radical prostatectomy was 69.8 months (range 7-168). Four of them (16.7%) had undergone adjuvant radiotherapy after radical prostatectomy. The mean operative duration was 378 minutes (range 261 to 510). Mean estimated blood loss was 910 mL (range 250 to 2400). The types of neobladder reconstruction were Kock neobladder in 3, Sigmoid reservoir in 1, Studer neobladder in 12, and T-pouch ileal neobladder in 8 patients. Despite of the extensive adhesion related to prior prostatectomy, there were no major intraoperative complications such as rectal injury or vessel injury. Pathology revealed pT0 (2), pTIS (3), pT1 (2), pT2 (7), pT3 (9) and pT4 (1). Of 20 patients eligible for evaluation of post-cystectomy urinary control, 11 patients (55%) with good continence (0-1 pad/day) after radical prostatectomy regained preoperative level of urinary control after cystectomy within one year. Four patients (20%) required placement of an artificial urethral sphincter several months after cystectomy due to severe incontinence. One had poor, 1 had fair (2-3 pads/day), and 2 had good (0-1 pad/day) urinary control before cystectomy out of these 4 patients. Five patients (25%) had an artificial urethral sphincter placed at the time of cystectomy and achieved good urinary control. Among 4 patients who have received adjuvant radiotherapy after radical prostatectomy, 1 regained good continence as pre-cystectomy status, 1 with poor continence after prostatectomy had an artificial urethral sphincter placed 2 months after cystectomy, and 2 with fair and poor continence after prostatectomy had an artificial urethral sphincter placed at the time of cystectomy.

Conclusions: Patients undergoing radical cystectomy after prior radical prostatectomy for prostate cancer pose a challenge to urologists. Those who are continent post radical prostatectomy, have a high chance of regaining good urinary control after neobladder reconstruction following radical cystectomy without increase in complication rates. Adjuvant radiotherapy for prostate cancer may have a negative impact on continence with neobladder reconstruction.

Source of Funding: None
EMPLOYMENT OF GENE EXPRESSION PROFILING AND A MACHINE-LEARNING ALGORITHM TO PREDICT SUPERFICIAL BLADDER CANCER RECURRENCE AT INITIAL PRESENTATION

(Presentation to be made by Dr. Mitra)

Purpose: 50-70% of pts with superficial (Ta/T1, N0M0) urothelial carcinoma (UC) of the bladder recur within 5 years of initial presentation. Presently, tumor grade and multifocality are routinely used indicators of recurrence. The tumors' potential to recur persistently necessitates intense follow-up and invasive treatment. It is therefore crucial to objectively determine the recurrence potential of these tumors. It is clinically important to identify pts at greatest risk of recurrence, while minimizing the invasive follow-up schedule for those who harbor relatively indolent disease. This study used a machine-learning algorithm to identify those superficial UC genes at initial presentation that were most predictive of recurrence, and used them in a molecular signature that would reliably predict risk of tumor recurrence within 5 years after TURBT.

Patients and Methods: 156 frozen primary superficial UC tumors obtained at first presentation by TURBT were initially evaluated for genomic analysis. Whole genome profiling was performed on 112 cases with definitive follow-up data by the Illumina Human WG-6 BeadChip. A previously reported genetic programming (GP) algorithm was adapted to evolve classifier programs for outcome prediction by creating mathematical models and assigning a slice point based on maximizing the area under the curve for the receiver operating characteristic of a program. Cross-validation-based resampling and gene usage frequencies were used to identify the most prognostic genes, which were combined into rules that were used in a voting algorithm to predict an unknown sample's target class. The key genes were validated by quantitative PCR.

Results: 88 (79%) pts recurred within 5 years of initial presentation in the cohort that underwent whole genome profiling. Pairwise analysis of controls and duplicates indicated good reproducibility among BeadChips (Pearson correlation coefficient 0.91). A GP algorithm using both crossover and mutational operators on tree-like structures was used to select a minimal set of markers grouped as a classifier for predicting recurrence. Cross-validation was used to estimate the classifier's robustness by analyzing its ability to generalize to unseen samples. The generated classifier set included 21 genes that could predict recurrence. RNA from a subset of 100 pts was then amplified for quantitative PCR for these 21 genes and 3 housekeeping genes. With amplicon sizes limited to 100 bases and Ct values >35 not being considered, a 4-fold cross-validation (n=83) resulted in a 5-gene combined rule that incorporated a voting algorithm to yield sensitivity and specificity of 77% and 85%, respectively, in predicting recurrence in the training set. The corresponding numbers in the test set were 69% and 62%. A singular 3-gene rule was also constructed that predicted recurrence with 80% sensitivity and 90% specificity in the training set. The corresponding numbers in the test set were 71% and 67%.

Conclusions: Using primary tumor tissues from initial occurrences of superficial UC, GP identified transcripts in a reproducible fashion that were predictive of recurrence. These findings could potentially impact superficial UC management, including surveillance frequency, administration of adjuvant therapy, and selection of candidates for an expectant approach.

Source of Funding: NIH
TARGETED IMAGING OF BLADDER CANCER WITH MOLECULAR CONTRAST AGENTS

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(Presentation to be made by Dr. Liu)

Objective: WLC has suboptimal diagnostic accuracy for nonpapillary and flat tumors, which are more likely to be high grade, recurrence prone, and progress to muscle invasive cancer. To overcome the shortcomings of WLC, new endoscopic imaging modalities have emerged in recent years, including confocal laser endomicroscopy (CLE). Targeted molecular imaging of bladder cancer could be achieved by coupling imaging modalities with labeled affinity binders such as antibodies and peptides that target cancer biomarkers. CD47 and EGFR are attractive antigen targets that are highly expressed in bladder cancer, and CD47 has been shown to be a promising therapeutic target. We report our preliminary experience with targeted imaging of high grade bladder cancer using CLE with CD47 antibody and EGFR-binding peptide as molecular contrast agents.

Materials and Methods: Fresh cystectomy (n=7) or nephrectomy (n=1) specimens were instilled with fluorescent tagged CD47 antibody, EGFR-binding peptide, or mouse IgG isotype control and incubated at 37°C for 15-30 min. Specimens were opened and CLE was performed on tumor, suspicious appearing, and normal appearing mucosa, followed by excision of imaged tissue for histopathologic comparison. Tumor-bound anti-CD47 was detected by immunofluorescence. Two cystectomy specimens were stained with an IgG isotype as a negative control, followed by CD47 antibody. The renal pelvis from a nephrectomy specimen removed for a parenchymal tumor was stained with CD47 antibody as another negative control.

Results: All bladders had high-grade urothelial carcinoma. The nephrectomy specimen had renal cell carcinoma with normal renal pelvis. In all bladders, the CD47 antibody and EGFR-binding peptide consistently showed greater fluorescent signal on CLE in areas of tumor, compared to normal urothelium. Imaging of an erythematous lesion with CD47 antibody showed no signal, and was confirmed to be inflammation by pathology. Immunofluorescence showed tumor-specific antibody on the superficial layer of tumor but not on normal urothelium. The isotype control showed no fluorescent signal on either the normal or tumor areas imaged, and subsequent imaging of the same areas with CD47 antibody showed fluorescent signal over tumor areas only.

Conclusion: CD47 antibody and EGFR-binding peptide are promising molecular contrast agents for targeted imaging of bladder cancer using CLE. Ongoing studies are underway to evaluate this imaging technique in vivo with CD47 antibody and CLE in a mouse orthotopic model of bladder cancer to provide the necessary foundation for in vivo application of targeted endoscopic imaging of bladder cancer in humans.

Source of Funding: Stanford School of Medicine Dean’s Fellowship, Stanford Cancer Center.
DOES PRESENCE OF SQUAMOUS AND GLANDULAR DIFFERENTIATION IN BLADDER TRANSITIONAL CELL CARCINOMA PORTEND POOR PROGNOSIS? AN INTENSIVE CASE–CONTROL ANALYSIS

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Purpose: More than 90% of bladder cancers occur as conventional transitional cell carcinomas (TCCs). A minority of these tumors harbors aberrant differentiation elements, of which squamous and glandular differentiations are the most common. Previous reports suggest that such differentiation is associated with worse prognosis. However, most of these analyses have examined few patients in isolation and/or in comparison with unmatched pure TCC patients. A direct head-to-head comparison of patients with TCC with differentiation elements vs. those with conventional TCC is required to analyze the true nature of the disease. This intensive case–control study analyzed differences in outcomes between patients afflicted with bladder TCC with squamous and/or glandular differentiation with their counterparts having conventional TCC.

Patients and Methods: Patients who underwent cystectomy for bladder cancer with curative intent at USC between 1971-2008 were retrospectively analyzed. Inclusion criteria were availability of detailed pathological assessment of primary bladder TCC obtained at cystectomy. Patients with peri-operative complications leading to death, and those with metastasis at diagnosis were excluded. Cases consisted of TCC patients with squamous and/or glandular differentiation. Controls included conventional TCC patients without differentiation elements. Each case was matched to a control with respect to tumor (tumor and pathological stage) and treatment (administration of intravesical agent, neoadjuvant/adjuvant chemo/radiotherapy) characteristics. The cohorts were also balanced with respect to patient characteristics (age, gender, race, smoker status, ASA score and BMI). Clinical outcomes between patients with/without TCC differentiation were compared.

Results: The cases consisted of patients with TCC with squamous (n=141), glandular (n=97) and squamous+glandular (n=21) differentiation. Equal numbers of TCC patients without differentiation were used as controls. The intensive controlling resulted in a cohort of 518 patients (median follow-up 12.1yrs). The cohorts were matched perfectly for tumor and pathological stage (p=1.0), with a total of 220, 162 and 136 patients with organ-confined, extra-vesical and node-positive disease, respectively. There were no significant differences in patient, tumor or treatment characteristics between cases and controls. This head-to-head comparison identified no significant differences in type of morphologic tumor growth (papillary and/or flat), multifocality, tumor upstaging, lymph node density, presence of hydronephrosis, positive surgical margins, CIS or lymphovascular invasion between cases and controls. No difference in time to recurrence (p=0.67) or overall survival (p=0.34) was noted between cases and controls.

Conclusions: This study examined outcomes of TCC patients with squamous and/or glandular differentiation compared to their counterparts with no differentiation after balancing for stage, patient, tumor and treatment characteristics. This indicates that TCCs with differentiation do not perform worse than their counterparts without differentiation, given the same stage and other characteristics. However, differentiated tumors may present later, thereby giving the impression that they forebode worse prognosis. The latter is the subject of ongoing investigation.

Source of Funding: None
**Objective:** Most cases of urinary bladder cancer present as noninvasive papillary (Ta) urothelial carcinomas. While grade and number of foci are currently the best estimators of subsequent Ta tumor behavior at first diagnosis, they are relatively imprecise measures for an individual patient. Several markers in the angiogenesis pathway have been previously implicated in regulating bladder cancer’s ability to invade and metastasize. This study used an agnostic approach to profile genes in the angiogenesis pathway in an effort to identify markers that could potentially predict Ta bladder cancer outcome.

**Patients and Methods:** Frozen cold cup biopsies of primary Ta G2/3 bladder tumors were obtained from 138 patients at initial presentation. Whole genome analysis was performed on these samples using the Illumina Sentrix platform. 33 (24%), 76 (55%) and 29 (21%) patients did not recur, recurred and progressed to a higher T-stage, respectively, during follow-up. Adequate follow-up duration ensured that patients likely to recur/progress did so by the end of the reporting period. 803 candidate genes across the human genome were identified by GeneCards v2.42 as being related to the angiogenesis pathway, and were used for further analysis. Mann-Whitney-U test examined associations of individual gene expression values with outcome. Hierarchical clustering and log rank analysis was used to examine the discriminatory potential of the final gene panel for recurrence and progression.

**Results:** Median follow-up of patients who never recurred (n=33) and never progressed (n=109) was 7.7 and 5.9 years, respectively. Genetic profiles of patients who never recurred (n=33) were compared to those who experienced recurrence with/without progression (n=105) to identify predictive markers for recurrence. Mann-Whitney-U test identified 270 genes that could individually predict tumor recurrence in this cohort (all p<0.05). To identify genes predictive of progression, profiles of patients who never progressed (n=109) were compared to those who progressed (n=29). 50 genes were identified by this analysis that individually predicted progression (all p<0.05). 18 genes were common between the two panels and were selected for final analysis. Hierarchical clustering using this 18-gene panel identified six patient groups with varying risks of recurrence and progression. Log rank analysis showed that the panel could significantly discriminate between patients with varying risk for recurrence (p=0.037), although its ability to do the same for progression fell short of statistical significance (p=0.16).

**Conclusions:** Unbiased profiling of angiogenesis-related genes represents a promising approach for predicting Ta bladder cancer outcome at initial diagnosis. The 18-gene panel was able to categorize patients into several strata based on risk of recurrence. Examining the interplay of angiogenic markers with other pathways may be essential to identify progression-based signatures. Such panels can help identify patients who need more aggressive management and intense follow-up.

**Source of Funding:** NIH
Introduction: The bladder cancer cells enter the lymphatics through the sentinel lymph nodes (SLN). The nodal status is one of the important predictors of the outcome of radical cystectomy. However, the extent of lymphadenectomy is controversial in the treatment of bladder cancer. In bladder cancer, there are limited clinical studies regarding intraoperative SLN detection. In addition, no targeted SLN tracer agents were used. Traditional SLN mapping agents like vital blue dye and radioactive sulfur colloid are non-specific and can pass through the SLN to downstream nodes. Tc-99m-tilmanocept (Lymphoseek, Neoprobe Corp) was engineered for specificity to the mannose receptor on macrophages found in lymph nodes. This study looks to evaluate Tc-99m-tilmanocept as a SLN agent for the bladder in pigs.

Methods: Six adolescent female pigs were anesthetized. The bladder was entered using a flexible cystoscope, and the bladder wall was injected with 0.1 mL of a 1:1 mixture of technetium-99m-labeled Tc-99m-tilmanocept (5 nanomole, 0.5 mCi) and 1% isosulfan blue. Midline lower abdominal incision was used to visualize the bladder. Injection of the Tc-99m-tilmanocept was confirmed by the “tattooing” effect of the bladder wall with the blue dye and the animals with this finding was group 1. The animals without this finding was group 2. Bilaterally, the obturator, external iliac, common iliac and the aortic bifurcation areas were dissected. The presence of lymph nodes were recorded and they sent for gamma counter. Percent of injected dose was calculated in each lymph node. The background radiation count was determined in each pig. The lymph node was considered to contain SLN if the count of the radiation was 4 times the count of the tissue background and/or if the amount of dose detected was ≥0.05% of injected dose.

Results: The bladder wall was injected successfully in four of the 6 pigs. The 4 pigs (Group 1) had 5 lymph nodes each (total of 20) removed and sent for analysis. Each of the 2 pigs without the injection into the bladder wall (Group 2) had 4 lymph nodes (total of 8). All the pigs in group 1 had at least 1SLN; an average of 1.5SLN/pig. None in group 2 had SLN. The gamma count per minute for Group 1 SLN, non-SLN and Group 2 were 1176608 (±538452), 39244 (±58651), and 17164 (±19807). The percent injected dose was 0.3208 (±2500), 0.0052 (±0.0077), and 0.0023 (±0.0026).

Discussion: Tc-99m-tilmanocept has been shown to work well as a SLN mapping agent in other cancers, such as breast cancer. Its specificity for lymph nodes makes it unique in SLN detection. Injecting a radioactive and visible blue dye tracer in the pig bladder allowed for visual confirmation of the bladder wall injection. When Tc-99m-tilmanocept was injected into the bladder wall sentinel nodes were detected reliably.

Conclusion: The SLN technique after bladder injection is feasible. Tc-99m-tilmanocept works as a SLN tracer agent. Trying Tc-99m-tilmanocept in human clinical trials for bladder carcinoma would be worth investigating.
ANATOMIC SITE-SPECIFIC DISPARITIES IN SURVIVAL OUTCOMES FOR PENILE SQUAMOUS CELL CARCINOMA
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(Presentation to be made by Dr. Tyson)

Introduction and Objective: To identify novel predictors of cancer-specific mortality (CSM) of penile squamous cell carcinoma (PSCC) of the penis using a population-based database.

Materials and Methods: Using data from the National Cancer Institute’s Surveillance, Epidemiology, and End Results (SEER) registry, we performed time-to-event analysis to determine which clinical parameters were useful in predicting CSM.

Results: From 1973 to 2007, a total of 5,169 cases of PSCC were entered into the database, of which 2,654 cases were excluded due to unspecified anatomic location. Patients were divided into two groups: primary tumors of the prepuce (n=722) and primary tumors of the glans, body and overlapping lesions of the skin (n=1,793). The median follow-up for the cohort was 39 months (range 1 to 411). Compared to tumors of the prepuce, tumors of the glans (HR 1.19, CI 0.88-1.62, p=0.25), body (HR 1.61, CI 1.00-2.60, P=0.05) and overlapping tumors of the skin (HR 1.79, CI: 1.13-2.83, p=0.01) have a higher risk of CSM, even when controlling for age, SEER stage, and tumor grade. Furthermore, disease-specific 10-year survival rates of preputial tumors are 89.4% compared to 78.7% for the other three groups combined (p<0.0001).

Conclusion: Anatomic site-specific disparities for PSCC survival appear to exist. Patients diagnosed with PSCC of the prepuce have improved overall long-term disease-specific survival compared to patients with primary tumors elsewhere.

Source of Funding: None
Introduction: Asymptomatic microscopic hematuria has long been considered an ambiguous finding. It is highly prevalent and patients are often worked up with high doses of ionizing radiation from CT scan and undergo invasive cystoscopy with infrequent serious findings. We developed a prospective cohort study within a large managed-care organization to determine which patients with asymptomatic microhematuria are at significant risk of cancer and require imaging and urologic evaluation.

Methods: A data collection tool was developed within the Kaiser Permanente electronic medical record wherein all Urologists entered five findings on each patient seen for asymptomatic microhematuria. The items collected are: 1. History of gross hematuria in past 6 months (yes/no); 2. result of initial imaging; 3. result of secondary imaging (if any); 4. cystoscopy findings; 5. cause of hematuria. Urinalysis results were stratified as 0-3, 4-10, 11-25, 26-50, > 50 rbc/hpf. Prospective data collection began in January 2009 and is ongoing. Currently we have 2655 patients accrued and 55 cancers identified. Patient demographics and smoking were also gathered from the medical record. Bivariate associations were assessed using the chi-square test. Multivariable logistic regression was used to build a predictive risk model.

Results: History of gross hematuria (p<0.001), age (p<0.001), sex (p<0.001) and smoking history (p=0.009) were significantly associated with cancer detection, while degree of hematuria on urinalysis was suggestive (p=0.088). A multivariable logistic regression model including these factors had an area under the receiver operator characteristic curve of 0.838 (95% confidence interval 0.760-0.916 and identified approximately 1/3 of the cohort with <0.5% chance of cancer detection, and also approximately 10% of the cohort with >10% chance of cancer.

Conclusions: Our results suggest that a relatively simple scoring system can safely identify patients with asymptomatic microscopic hematuria who will not benefit from further evaluation and may avoid the risk associated with unnecessary radiation exposure.
DIFFERENTIAL EXPRESSION OF CLASS I SMALL LEUCINE-RICH PROTEOGLYCANS IN AN ANIMAL MODEL OF PARTIAL BLADDER OUTLET OBSTRUCTION

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(Presentation to be made by Dr. Maciejewski)

**Purpose:** Partial bladder outlet obstruction has been shown in a rat model to follow a progression from inflammation to hypertrophy to fibrosis. Small leucine-rich proteoglycans (SLRPs) are components of the extracellular matrix that are intimately associated with collagen fibrillogenesis and resultant scar formation. Experimental work has identified differential SLRP expression in abnormal fibrotic processes, including renal fibrosis, cirrhosis, hypertrophic scar, and pulmonary fibrosis. Two critical molecules identified in these processes are decorin and biglycan. Our objective in this study was to characterize differential expression profiles of Class I SLRPs, specifically that of decorin and biglycan, in a rat model of partial bladder outlet obstruction (pBOO). We hypothesized that expression of decorin and biglycan in our model would parallel other scar models, where decorin is downregulated and biglycan is conversely upregulated.

**Materials and Methods:** Female Fisher rats underwent either surgical ligation of the bladder neck to induce pBOO, or sham surgery. Animals were sacrificed at 2, 4, 8, and 12 week time points, and bladders were harvested for frozen section analysis and snap frozen for mRNA collection. Frozen sections were dual stained for immunofluorescence with antibodies against decorin and biglycan, as well as conventional H&E stains. mRNA expression for decorin, biglycan, and GAPDH was analyzed using quantitative real-time RT-PCR. Western blotting was used to compare protein expression levels of decorin and biglycan between samples.

**Results:** All rats survived to specified experimental end points. There was no evidence of health compromise or hydronephrosis on necropsy. H&E stains showed a progression from inflammation at the 2-week timepoint, to hypertrophy and eventual fibrosis at later time points. Immunofluorescent stains showed progressive downregulation of decorin and upregulation of biglycan over the 12 week experimental course by 0.71 and 1.88 respectively (p=0.08 and p=0.001), in comparison shams. Quantitative real-time RT-PCR confirmed these findings in 12 week specimens, by observing a downregulation of decorin by a factor of 0.45 (p=0.02) and upregulation of biglycan by a factor of 2.04 (p=0.08), using GAPDH as a housekeeping gene and in comparison to shams. Western blot analysis confirmed a progressive downregulation of decorin and upregulation of biglycan from the 2 to 12 week timepoint.

**Conclusions:** We present the first identification of SLRPs in normal and abnormal bladder tissue. Furthermore, we present the first identification of abnormal differential SLRP expression in the process of bladder fibrosis, consistent with experimental findings in other anatomical sites. Further investigation into the expression of SLRPs and their regulatory mechanisms may allow for the development of new anti-fibrotic therapeutics.

**Source of Funding:** Northern Alberta Urology Foundation
A RAPID AND RELIABLE METHOD OF AUGMENTATION CYSTOPLASTY AND CREATION OF A CATHETERIZABLE CHANNEL USING THE RIGHT COLON AND TAPERED TERMINAL ILEUM.

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(Presentation to be made by Dr. Taylor)

PURPOSE: The combination of augmentation cystoplasty and creation of a catheterizable channel is a formidable undertaking with subtle pitfalls that can lead to functional failure of the reconstruction. We report the outcomes in 7 patients of a rapid single-step technique for augmentation cystoplasty and creation of a catheterizable channel utilizing the right colon and tapered terminal ileum.

METHODS: We retrospectively reviewed the charts of patients who underwent urinary tract reconstruction at the University of Utah and the University of California San Francisco from July 2008 through May 2011. Data included: age, previous urologic surgeries, comorbidities, etiology of bladder dysfunction, peri-operative complications, late complications, and follow-up.

RESULTS: In our reconstructive practice 54 patients underwent urinary diversion or augmentation cystoplasty, between July 2008 and May 2011, because of neurogenic or other non-oncologic etiology. In 7 patients we utilized right colon and tapered terminal ileum to augment and create a catheterizable channel in one step. The etiology of the 7 patient’s bladder dysfunction was neurologic disease or spinal cord injury (5), intractable urethral stricture disease (1), and urethral loss from pelvic fracture (1). The median age was 42, most were female (6), and had failed a previous repair (4). The augmentation was performed by opening the bladder anteriorly from the neck to the trigone posteriorly. The cecum and the ascending colon were mobilized medially, freeing the hepatic flexure. The terminal ileum was freed from its medial attachments to the retroperitoneum towards the root of the small bowel. Approximately 12-15 cm of cecum and ascending colon was isolated and divided. Similarly about 15 cm of terminal ileum was isolated and tapered over a 16 F catheter with a bowel stapler or imbricating silk sutures to create the catheterizable channel. This was performed as described for a right colon or “Indiana” pouch. The colon was opened longitudinally and sewn to the bladder, orienting the terminal ileum posteriorly. The catheterizable channel was then affixed to the abdominal wall. This technique was combined with autologous pubovaginal sling in 2 patients and bladder neck closure by interposition of the augment in 2 more. The median follow-up in the 7 patients was 4 months. 4 patients had peri-operative wound infection or seroma and one patient was re-admitted for wound management. One patient had traumatic catheterization of her augment during an unrelated surgery and developed incontinence of her catheterizable channel. This has been managed successfully with injection of a bulking agent. None of the patients currently has leakage from their catheterizable channel, 2 have infrequent leakage from their patent urethra when the bladder is at capacity.

CONCLUSIONS: In 7 patients the short-term outcomes of augmentation cystoplasty and creation of a catheterizable channel with right colon and terminal ileum was excellent. All patients were continent and catheterizing their augmented bladders. Any surgeon familiar with creation of a right colon or “Indiana” pouch can adapt the same technique to augmentation cystoplasty and creation of catheterizable channel.
MEASUREMENT OF DETRUSOR TISSUE SATURATION INDEX (TSI) AND COMPARISON OF DETRUSOR OXYGENATION DURING URODYNAMICS TO NATURAL FILLING / EMPTYING USING WIRELESS NEAR-INFRARED SPECTROSCOPY IN THE NEUROGENIC BLADDER

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(Presentation to be made by Dr. Stothers)

INTRODUCTION AND OBJECTIVES: Near-Infrared spectroscopy has been used to measure changes in detrusor oxygenated, deoxygenated and total hemoglobin concentration (O2Hb, HHb & tHb) during filling and voluntary voiding in non neurogenic subjects. The tissue saturation index (TSI) provides a value of oxygenation independent of a tissue path length factor unique to the NIRS technique. The objective of this study was to observe: (1) changes in wireless NIRS chromophores during artificial filling with UDS (2) to provide within patient comparisons during natural filling / reflex voiding and (3) to measure the detrusor TSI in neurogenic bladders.

METHODS: NIRS was recorded using wavelengths of 760, 850 and 830 nanometers. Data was held internally in a NIRS wireless instrument (Artinis Medical Systems ©) and broadcast on demand to a remote computer. NIRS was recorded during natural filling and reflex voiding as well as during multichannel urodynamics with EMG using a water filling at a rate of 50cc. NIRS data (O2Hb, HHb & tHb) were collected at 10 Hz and graphs of patterns of change compared using spatial resolution. Artinis statistical software © calculated continuous TSI in all cases.

RESULTS: 12 male spinal cord injured (5 ASIA complete and 7 incomplete) T12 or higher, 2 cases of spina bifida and 3 non neurogenic controls participated. Chromophore tracings were successfully stored in the wireless device and then transmitted in every trial without loss of data allowing a calculated TSI in each case. A wireless tracing in a male neurogenic bladder during filling and reflex voiding is shown with reduced TSI during filling. Spatial resolution found patterns within the same subject reproducible when subjected to overlapping graphic analysis during natural filling / incontinence episodes compared to pump filled UDS. TSI fluctuated during filling in neurogenic cases compared to controls.

CONCLUSIONS: Wireless NIRS monitoring is feasible in neurogenic non ambulant individuals. NIRS patterns observed during UDS can be reproduced during natural filling. Detrusor TSI was observed to fluctuate during filling in neurogenic individuals providing observation of possible neurovascular alterations in these cases.

Source of Funding: Rick Hansen Foundation for Spinal Cord Research provided funding which supported data analysis in this study.
LONG-TERM OUTCOMES FOLLOWING TRANSVAGINAL BONE-ANCHORED POLYPROPYLENE SLING PLACEMENT

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(Presentation to be made by Dr. Kim)

Introduction: The transvaginal bone-anchored polypropylene sling (BAS) has proven to be a successful treatment for patients with SUI. However, there is limited data on long-term outcome following BAS placement. We examined our series of patients who had at least 3 years of follow-up after placement of BAS and report the results.

Materials and Methods: A retrospective review of prospectively collected data of patients undergoing BAS for SUI with minimum 3 year follow-up was performed. Surgical outcomes were determined from annual mailed post-operative questionnaires. Surgical outcomes included patient-perceived improvement, satisfaction, and degree of post-operative SUI. Success was defined as less than 1 incontinence episode per week or >70% symptom improvement.

Results: Overall, we identified 142 patients who had undergone BAS and had answered post-operative questionnaires at a minimum of 3 years. Average follow-up was 55 months (range 36-97 months). 50/142 (35.2%) of patients had undergone BAS after failure of previous anti-SUI procedure. Mean Valsalva leak point pressure (VLPP) was 43 cmH₂O (range 0-100) and mean age was 64 years (range 35-89 years). 30.5% of patients reported no SUI and 60.3% of patients reported ≤1 SUI episode/week after BAS placement. Overall success was reported as 67.6%. 63.8% of patients reported themselves to be ≥70% improved and 57.9% reported ≥70% satisfaction. Success rates for patients who had failed previous procedures was 56.0% and significantly lower than the 73.9% success rate for patients undergoing a primary procedure for SUI. In addition, patients who were considered failures were on average 5 years older than their counterparts who were considered successes (69y vs. 63y, p0.11). VLPP was not significantly lower in patients who had failed BAS (38.7 cmH₂O vs. 45.2 cmH₂O, p=0.15). Complications were minimal with 4 patients who had vaginal mesh extrusion, all of which were treated successfully with local mesh excision. One patient had bladder erosion of the prolene anchoring stitch, which was excised successfully. One patient developed a pelvic hematoma post-operatively that did not require blood transfusion. There were no cases of bone anchor infection.

Conclusion: Long-term success for BAS was found to be 67.6%, which may appear lower than other surgical treatments for SUI. However, this patient population represented a more severe spectrum of SUI as evidenced by the low mean VLPP of 43 cmH₂O and high percentage of patients undergoing BAS for failure of previous anti-SUI procedures. We believe the BAS remains a good option for patients with severe/recurrent SUI. It provides the added advantage of not needing to violate the retropubic or transobturator space during placement.
Purpose: To study the epidemiology of adult genito-urinary (GU) injuries caused by the use of consumer products prompting presentation to US emergency departments (ED).

Methods: We analyzed the National Electronic Injury Surveillance System (NEISS), a national probability sample of US hospitals, to determine consumer product-related GU injury incidences. Patient information is gathered from every NEISS ED visit involving an injury associated with a consumer product. Based on this weighted survey data, nationwide incidence of product-related injuries treated in the ED can be estimated.

Results: In 2009, a national estimate of 18002 individuals presented to the ED with consumer product-related GU injuries. Of these injuries, 69% and 31% occurred in men and women, respectively. The most common categories of products involved were sports related items (24.5%), articles of clothing (12%), shaving items (9%), furniture pieces (8%), and bathroom fixtures (6%). Of sports product related injuries, the most common products involved were bicycles, basketballs, soccer balls, and footballs, comprising 30.2%, 13%, 10.1%, and 9.9% of all sports product related injuries respectively. Of clothing injuries, the majority were due to zipper injuries of the penis (77.3%) which on their own represented 7.7% of all GU product related injuries presenting to the ED in 2009. The second most common clothing injury was due to underwear, representing 15.1% of clothing related GU injuries. Shaving related injuries were related to use of razors (77%), scissors (15%), and hair clippers (8%). Razor use during shaving on its own was related to 7.5% of all GU injury related presentations to the ED that year. The majority of furniture related injuries were due to trauma during use of a chair (52%); these often occurred during a fall from a chair or when trying to step over or jump over the chair. The most common bathroom fixture related injuries were during use of a shower (51.1%) or toilet (37.5%). Specifically, injury from a toilet seat crushing one’s penis was responsible for 9.4% of all GU related bathroom fixture injuries.

Conclusions: Our results suggest that product related GU injuries are a significant health concern, prompting over 18000 presentations to US emergency rooms in 2009. Sports related items, articles of clothing, shaving items, furniture pieces, and bathroom fixtures all had significant involvement in such injuries. Specifically, bicycles, zippers, razors, chairs, showers and toilets were involved in many of these GU injuries.

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TEMPORARY PROSTATIC URETHRAL STENTING AS A PROVACUATIVE TOOL TO DETERMINE SURGICAL ELIGABILITY IN COMPLEX BLADDER OUTLET OBSTRUCTED PATIENTS: OUR INITIAL EXPERIENCE
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Introduction: The prevalence of bladder outlet obstruction increases with age. Unfortunately, so does a decline in general health with additional morbidities complicating an already high risk population when definitive surgical intervention is considered. The Spanner™ Prostatic Stent (AbbeyMoor Medical, Parkers Prairie, MN) is a temporary self-contained device that bypasses the obstruction of the prostatic urethra while allowing the patient to maintain continence via their external urethral sphincter. This enables the patient to experience the functional results of a definitive surgical procedure without the need or risk of surgery and to evaluate the impact on their quality of life. Most patients prefer not to have an indwelling foley catheter, require self-intermittent catheterization or the need for a suprapubic tube, but worry about their continence after outlet surgery. The objective of this study was to retrospectively evaluate the usefulness of the temporary prostatic urethral stent to determine which high risk surgical patients would benefit from definitive surgical management of their bladder outlet obstruction.

Materials and Methods: We retrospectively analyzed our institutional review board approved database of all patients that received at least one temporary prostatic urethral stent. Twenty patients were identified from April 2008 to January 2011. All demographic data, PSA levels, post-void residuals, infections, complications, and outcomes were examined before and after stent placement.

Results: Forty Spanner™ stents were placed in 20 patients. Mean age was 78 years (54-97 years) and prostate size was 62.1 cm³ (17-215.9 cm³). Urinary retention was present in 60% (12/20) of patients, but in those able to void the mean maximal flow rate (Qmax) was 10.8 mL/s (1.2-29 mL/s), average flow rate (Qavg) was 5.0 mL/s (1.2-9 mL/s), and post void residual (PVR) was 208.8 mL (5-572 mL). In all patients (even those previously in retention), after the prostatic stent was placed, the mean Qmax was 9.8 mL/s (1-34 mL/s), Q avg was 5.7 mL/s (1-21 mL/s), and PVR was 226 mL (0-875). Six patients were on one or more anticoagulation medications, and 80% of the patients had 3 or more associated medical co-morbidities. These included dementia, diabetes, Parkinson’s disease, cancer, coronary artery disease among other conditions making them high risk surgical patients. 35% (7/20) of patients did well with the stent and progressed to definitive surgical management with either a HoLEP or HoLAP. 10% (2/20) leaked urine with the stent in place and subsequently went back to catheter management, while another 30% (6/20) were unable to urinate, had urinary frequency or pain and chose to go back to catheter management. One patient passed away unrelated to the stent. Two patients continue to use the stent for long term control and two patients chose to go back to medical management for their bladder outlet obstruction.

Conclusions: In our initial experience, the use of the temporary prostatic urethral stent provided a good provocative test that enabled patients to experience what their likely voiding status would be like if they were to undergo definitive surgical management. The value of this over traditional urodynamic testing appears to be real, but only further study can elucidate final recommendations in this regard. The fact that only 35% of our patients progressed to definitive surgical management ensures excellent patient outcomes and maximizes our ability to properly stratify patients with bladder outlet obstruction with significant medical comorbidities.

Source of Funding: None
URETHRAL RECONSTRUCTION OF LONG-SEGMENT LICHEN SCLEROSIS STRICTURES: COMPARISON OF SURGICAL TECHNIQUES AND OUTCOMES

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(Presentation to be made by Brandon Nadeau)

Objectives: Lichen sclerosis related urethral strictures provide a unique reconstructive challenge to urologists. Long segments of urethra can be involved, and standard urethroplasty techniques are typically less effective. The purpose of this study was to assess the relative outcomes of three surgical options in the treatment of lichen sclerosis strictures; 1. staged reconstruction, 2. one-stage onlay reconstruction, and 3. urethrostomy. Within the urethrostomy group, patients with panurethral disease were treated with an “augmented” urethrostomy, which involved buccal mucosa graft onlay to a perineal urethrostomy.

Methods: A retrospective analysis was performed on a database containing all urethral reconstructions performed by a single urologist from August 2003 to February 2011. Forty-two male patients (mean age 52.4 years) were identified with lichen sclerosis as the stricture etiology with 39 having sufficient follow-up for analysis. Patients were divided into those who received staged reconstruction (14), one-stage onlay (13), or urethrostomy (12). Of the 12 urethrostomies performed, 10 were of the “augmented” variety in patients with panurethral stricture extending to the proximal bulbar urethra. Stricture length, location, and patient preference were factors in determining which procedure was selected. The primary outcomes measured were the need for additional procedures, presence of post-operative lower urinary tract symptoms, and urethral patency at 6 month cystoscopy. Statistical significance of success rates were determined by two-tailed Chi-square analysis (p<0.05).

Results: Of the 39 patients assessed, there was a mean stricture length of 11.7 cm, and an average follow-up of 39.7 months. The overall success rates (those not requiring additional procedures) were 92% for urethrostomy techniques, 79% for two-stage reconstruction, and 54% for one-stage onlay. Urethrostomy techniques were found to offer better success rates than one-stage onlay (p=0.04). There was no statistically significant difference in success rates between urethrostomy and staged reconstruction (p=0.36), nor between staged and onlay (p=0.17). At 6 month cystoscopy, 100% of urethrostomies were patent, compared with 92% of two-stage reconstructions, and 83% of one-stage onlays. Finally, the rates of post-operative LUTS were 9% for urethrostomy, 23% in two-stage reconstructions, and 58% in one-stage onlay.

Conclusion: Urethrostomy techniques appear to offer the best outcomes when treating urethral strictures secondary to lichen sclerosis, particularly when compared to onlay techniques. Superior results are seen in overall success rates, urethral patency, as well as post-operative lower urinary tract symptoms. In patients with true panurethral disease, an “augmented” urethrostomy using buccal mucosa to treat select segments is a viable option. Onlay techniques alone exhibit worse outcomes, while staged reconstruction in select patients with penile urethral stricture seems a reasonable alternative when urethrostomy is unwanted.

Source of Funding: None
Purpose: Radiation therapy is a common modality used to treat prostate cancer and is associated with the development of urethral stricture. The resulting compromised wound healing, altered tissue planes and impaired blood supply of irradiated tissue can make urethraplasty challenging. Our objective was to report outcomes of urethroplasties performed after radiation therapy for prostate cancer.

Materials and Methods: We performed a review of a prospectively collected single surgeon urethroplasty database for cases of urethral stricture after radiation therapy for prostate cancer between June 2004 and May 2010. Patient prostate cancer therapy type, stricture length and location, and urethroplasty performed were obtained. All patients received clinic evaluation including voiding cystourethrogram (VCUG) 1-2 months post procedure. Treatment success was defined as no need for repeat surgical interventions such as dilation, direct visual internal urethrotomy or repeat urethroplasty.

Results: Thirty-one patient underwent urethroplasty for radiation-induced stricture. Previous radiation therapy included external beam (XRT), radical prostatectomy/XRT, XRT/ brachytherapy and brachytherapy in 13, 7, 6, and 5 patients, respectively. The mean age was 71 years. Stricture was localized to bulbar, membraneous and penile urethra in 21 (68%), 8 (26%), 2 (6%) patients, respectively. Mean stricture length was 1.9 cm. Four patients underwent buccal-graft repair and 27 retreated with end-end anastomotic urethroplasty. Overall success rate was 90%. Of the 4 patients who underwent buccal-graft urethroplasty, there was no reported stricture recurrence. Of the anastomotic group, 24 patients reported treatment success (89%). Time to recurrence ranged from 5 to 38 months (mean 19) post urthroplasty.

Conclusions: Both buccal mucosa graft and end-to-end anastomotic urethroplasty appear to be viable options to treat radiation-induced urethral stricture. Future studies should examine the durability of these repairs.

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RECONSTRUCTION OF URETHRAL STRICTURES FOLLOWING PELVIC RADIATION THERAPY
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(Presentation to be made by Dr. Zorn)

Objective: Radiation based treatments have proven useful in the management of pelvic malignancy. Urethral stricture disease, however, is one of the complications of such treatment. Reconstruction has become an effective therapy for urethral strictures of diverse etiologies but there is a paucity of literature regarding the surgical treatment of radiation induced urethral strictures. The objective of this study is to report outcomes of urethral reconstruction for radiation induced urethral strictures. The primary outcome measure was urethral patency with secondary outcome measures being incontinence and 90-day complication rates.

Methods: A retrospective/prospective database review of urethral reconstructions performed by a single surgeon (KR) at the University of Alberta from August 2003 to November 2010 was performed. Patients who underwent reconstruction for urethral stricture disease after radiation treatment in the form of External Beam Radiation Therapy (EBRT) or prostate Brachytherapy were identified. Demographics, comorbidity status, stricture location/length, reconstruction technique, urethral patency, post-operative incontinence and 90-day complication rates were collected.

Results: During the study period, 507 urethral reconstructions were performed. Of these, 18 met our inclusion criteria including 11 and 7 reconstructions following EBRT and Brachytherapy, respectively. Fifty-six percent of patients presented with a long-term indwelling catheter. Mean patient age at time of surgery was 67.9 years with a mean stricture length of 4.3cm. Reconstruction was performed by excision and primary anastomosis (EPA) in 8 (44.4%) of the cases. The remaining patients required tissue transfer as either buccal mucosa graft (BMG)(33.3%) or penile island flap (22.2%). Of the 18 reconstructions, 17 had matured to at least a 6-month follow-up (range: 6-86months). Of those, 16 patients (94.1%) achieved cystoscopic patency and 2 (11.8%) developed incontinence but did not require intervention. The 90-day complication rate was 22.2% and was typically catheter or infection related.

Conclusions: There is a paucity of literature regarding reconstruction of urethral strictures after radiation therapy for pelvic malignancy. Although this cohort makes up only 3.6% of the reconstructions during the study period, it is comparative to the published literature. This cohort demonstrates satisfying objectives in regards to urethral patency rates with acceptable incontinence and 90-day complication rates, especially considering the challenging nature of stricture disease in this setting. No single reconstructive technique appears superior when treating these strictures.

Source of Funding: None
THE CONTEMPORARY PRESENTATION OF ANTERIOR URETHRAL STRICTURE: IS IT SOLELY A QUESTION OF LUTS?
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(Presentation to be made by Dr. Rourke)

Objective: It is assumed that patients with urethral stricture present primarily with lower urinary tract symptoms (LUTS). Consequently the majority of outcome measures focus on urethral patency and the absence of voiding symptoms. Variation in the presentation of urethral stricture could substantially impact any patient centered definition of treatment success. This purpose of this study is to determine the presenting (primary) and associated symptoms of patients with anterior urethral stricture.

Materials and Methods: A retrospective analysis was performed on a cohort of 897 patients referred for evaluation of urethral stricture over a 6-year period. Stenosis of the posterior urethra and acute anterior urethral injuries were excluded. Six hundred and eleven patients met the study inclusion criteria. The primary presenting symptom and other associated symptoms were analyzed and divided into one of 10 categories; LUTS, urinary retention, gross hematuria, urinary tract infections, difficult catheterization, urethral abscess, renal failure (due to bladder outlet obstruction), pain, sexual dysfunction, or incontinence.

Results: As expected, the most common primary symptom of individuals presenting with urethral stricture was LUTS (54.3%). Twenty-three percent of patients presented with acute urinary retention requiring emergent intervention. Symptoms other than LUTS or retention accounted for 22.3% of the primary presenting complaints. These included urinary tract infections (6.2%), gross hematuria (3.3%), difficult catheterization (4.7%) and pain (3.4%). Interestingly, 23.4% of patients presented with pain as an associated complaint. Of particular note 7.5% of patients presented either renal dysfunction due to bladder outlet obstruction or abscess related to the urethral stricture.

Conclusion: Although many patients with urethral stricture disease present with LUTS or urinary retention, 22.3% of patients present with a different primary concern. Defining a successful outcome after treatment for anterior urethral stricture should include more than the absence of LUTS or urinary retention; other presenting problems need to be taken into account. Importantly, 7.5% of patients present with a potentially life threatening condition such as obstructive renal failure or peri-urethral abscess. Urethral stricture is not solely a “quality of life” condition.

Source of Funding: None
MIDLINE EXTRAPERITONEAL APPROACH FOR RETROPERITONEAL LYMPH NODE DISSECTION
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(Presentation to be made by Dr. Syan)

Introduction: Retroperitoneal lymph node dissection (RPLND), an important modality in the treatment of non-seminomatous germ cell testicular tumor (NSGCT), can be technically challenging and associated with significant morbidity, particularly in the post-chemotherapy setting. Recently, we adopted a midline extraperitoneal approach, which has the potential to decrease perioperative complications, particularly gastrointestinal morbidity. We present our experience performing a midline extraperitoneal (EP) RPLND in patients with NSGCT.

Materials and Methods: Since 2004, 100 patients have undergone RPLND by a single surgeon (90 post-chemotherapy, 10 primary). 13 patients underwent EP-RPLND using a midline incision, including nine for post-chemotherapy residual masses. All patients underwent successful ipsilateral vessel, interaortocaval dissection and contralateral vessel exposure and mobilization with retro-caval/aortic nodal dissection (Figure). Clinical characteristics and outcomes were retrospectively reviewed and compared to a cohort of patients undergoing midline transperitoneal (TP) RPLND, matched for age and preoperative size of mass.

Results: There were no significant differences between the EP-RPLND and TP-RPLND groups with regard to patient age (28.8 vs. 28.3 years, p=0.86), preoperative size of mass (3.23 vs. 3.11 cm, p=0.90), or operative time (313 vs. 369 minutes, p=0.078). No EP-RPLND patients received intraoperative transfusion and EBL was significantly decreased compared to TP-RPLND (316 vs. 650 mL, p=0.010); one patient in the TP-RPLND received intraoperative transfusion. EP-RPLND patients had more lymph nodes retrieved compared to TP-RPLND (37 vs. 23 nodes, p=0.0065). EP-RPLND patients had a mean postoperative length-of-stay of 3.5 days versus 5.6 days for TP-RPLND, which was also statistically significant (p = 0.0003). There was one early complication in each group – arytenoid dislocation (EP-RPLND); readmission for nausea and vomiting (TP-RPLND). A late complication of chylous ascites occurred in the TP-RPLND group, and was managed conservatively.

Conclusion: Extraperitoneal RPLND can be performed safely without prolonging operative times, compromising exposure, or ability to perform complete node dissection, even in the selected post-chemotherapy setting. To our knowledge, this is the first report of a series of patients undergoing this approach through a midline incision. This approach is associated with shorter hospital stay, which may be attributed to a decreased incidence of postoperative ileus and faster return of bowel function.
EFFECTS OF SYMPTOM SEVERITY AT BASELINE ON OXYBUTYNYN TOPICAL GEL–MEDIATED IMPROVEMENT OF CONTINENCE IN WOMEN

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(Presentation to be made by Dr. Sand)

Purpose: Oxybutynin chloride topical gel (OTG) is a new transdermal formulation of oxybutynin, a well-established antimuscarinic agent for the treatment of overactive bladder. Results of a pivotal 12-week, phase 3 study, demonstrated that OTG significantly reduces the number of daily incontinence episodes (IEs) compared with placebo. In this post hoc analysis of data from female participants, the effects of incontinence severity at baseline on OTG-mediated improvement of continence in women were assessed.

Materials and Methods: Changes in the number of IEs/day from baseline to the last observation (study end) were determined separately in women with 2 to 3 (moderate incontinence) and those with >3 IEs/day at baseline (severe incontinence). Treatment groups were compared by analysis of covariance (for absolute changes from baseline) or analysis of variance (for percentage changes from baseline).

Results: Of the 704 female study participants, 507 had severe and 145 had moderate incontinence. In both analysis groups, women receiving OTG and those receiving placebo had similar numbers (mean ± standard deviation) of IEs/day at baseline (moderate incontinence: OTG, 2.4 ± 0.4 vs placebo, 2.5 ± 0.4; severe incontinence: OTG, 6.7 ± 2.9 vs placebo, 6.7 ± 3.0). In both analysis groups, women receiving OTG achieved significantly greater decreases from baseline in IEs/day than those receiving placebo (moderate incontinence: OTG, −1.6 ± 1.4 vs placebo, −1.1 ± 1.3, \( P = 0.0030 \); severe incontinence: OTG, −3.6 ± 3.0 vs placebo, −3.1 ± 3.3, \( P = 0.0034 \)). Percentage decrease in IEs/day also was significantly greater with OTG than placebo in both analysis groups (moderate incontinence: OTG, −68 ± 56 vs placebo, −45 ± 49, \( P = 0.0094 \); severe incontinence: OTG, −56 ± 41 vs placebo, −46 ± 43, \( P = 0.0074 \)). Among women with moderate incontinence at baseline, 48% of those who received OTG compared with 20% of those who received placebo achieved complete continence. Among women with severe incontinence at baseline, 17% of those who received OTG and 12% of those who received placebo achieved complete continence.

Conclusions: OTG compared with placebo significantly reduced the number of daily IEs in women with OAB, irrespective of the severity of incontinence at baseline. The difference between OTG and placebo in mean absolute reduction in the number of IEs was not affected by incontinence severity at baseline. Among women with moderate incontinence at baseline, those treated with OTG were more than twice as likely to achieve continence by study end as those who received placebo and the difference was highly statistically significant. Although women with severe incontinence were less likely to achieve complete continence than women with moderate incontinence, they also achieved significant symptom improvement with OTG.

Source of Funding: Watson Laboratories, Inc.
Purpose: Single Incision Slings (or mini-sling) are gaining popularity, as the intermediate and long-term data is being accumulated. Most clinicians reserve mini-sling for patients without prior anti-incontinence surgery. We present a review of a small group of patients who underwent a single incision sling procedure when their primary anti-incontinence surgery failed.

Materials and Methods: We identified and reviewed charts of 8 patients who underwent a transvaginal mid-urethral single incision sling procedure between 2009 and 2010. The surgical candidates underwent history and physical examination and urodynamic testing, as indicated. Quality of life questionnaires (Urogenital Distress Inventory (UDI-6) and Incontinence Impact Questionnaire (IIQ-7) were administered preoperatively. The patients were followed up postoperatively for evidence of treatment success and adverse events. The patients completed the UDI-6, IIQ-7 at 12 months. Success was defined as 80% improvement and one or less party-liner used.

Results: 8 patients with recurrent stress urinary incontinence underwent placement of a single incision sling. The mean patient age was 72.5 years (range 59-86 years). The mean body mass index was 32.6km/m2. The mean preoperative pad use was 5.8 (3-15). Mean time elapsed from the original anti-incontinence surgery was 9.5 years (range 1-31 years). The original anti-incontinence procedures varied from bladder neck needle suspension in 3 patients, porcine pubovaginal sling in 3 patients and transobturator mid-urethral sling in 2 patients. Mean follow-up after single sling incision surgery was 14.4 months (range 11-24 months).

Of 8 patients, 6 (75%) met our definition of success at 12 months, one patient improved (decreased pad use by 50%). Urinary incontinence in one patient (12.5%) remained unchanged after the procedure. Four patients (50%) had urinary urgency / urge incontinence pre-operatively. Another 3 patients (75%) developed de novo urgency and urge incontinence after the sling procedure. Two patients (one with de novo urgency and one with pre-operative urgency) underwent sacral nerve modulation procedures with significant improvement of their symptoms. There was no postoperative urinary retention, mesh erosion/extrusion or groin pain.

Conclusions: Single incision slings could be a minimally invasive option for correction of recurrent stress urinary incontinence in women who failed prior anti-incontinence surgery. Short-term outcomes in this small group parallel those of repeat synthetic mid-urethral sling. De novo urgency remains significant in the repeat sling group. Long-term follow up is necessary to access durability of the above results.

Source of Funding: None